

S. Dyer, Mt. Harrison, O.

Dr. C. A. Miller -

Corner Court &

Baymiller St

Cincin -

S. A. Miller, Esq -

Cincin -

H. H. Hill & Co

Dr. Baynes

Corner Race & 5th

~~_____~~
~~_____~~
~~_____~~
~~_____~~
~~_____~~

Prof. Edward Orton, Yellow Springs
Ohio.

Left Washington and started
westward Augt. 4th 1880 -

Stopped at the Berkeley Springs, ^{W. Va.}
4 days - Came on to Oakland
on the Mts. in W. M. D. Remained
there one week. Then came
on to Cleveland, where I arrived
the 18th Augt. Remained there
waiting for Dr. Newberry six days
to the 24th. On the 25th
went with Dr. N. to Bass Is-
land, in Lake Erie, where we
remained to the 26th and then
returned to Cleveland. Remained
there until the 29th. Then came
down to Columbus, and remained
there until Sept. 6. Then went
to Ann Arbor and remained to the
12th Sept. and returned Cleve. again
where I remained to the 18th

and then started to Washington
where I arrived Sept. 15th.

D. H. Shaffer - Cincinnati

(276 Cutter St)
~~Cincinnati~~

- Conchocle Gabb.

I have examined Conrad's *Conchocle* from Astoria, which seems to be very closely allied to Gabb's type of his genus *Conchocle*. From this shell I am led to think that the long posterior marginal furrow mentioned by Mr. Gabb, is only the furrow for the ligament, which is ^{long} very deeply seated in a marginal furrow. I am also inclined to think the long sharp tooth described by him as running from the beaks parallel to the ^{card} margin almost to the ~~posterior~~ margin is only the margin of the ligament furrow.

Melania Taylori, Gabb.

seems to be very closely
to one afterwards described to
me from the same beds, in Proctor
Acad. and figured for Mr King
Report.

Coat Measures Skin

Washington Aug 71

	Passage Ticket to Cin	\$15.00
	Sleeping Car	2.00
	Baggage to Depot	
Aug 8.	Breakfast at Grafton	
	Supper at Winchester	
"	Omibus & Trunk to Hotel	
12	Ticket out to Mr. Gannett	
15	Ticket to Lebanon & back	2.00
"	Dinner at "	
21	To Loveland & back	1.12
22	Telegram to base	
"	Lunch at Dr. Webb's	1.00
23	Bill at Gibson House Cin	42
"	Fare to Richmond	2.50
	Omibus to Depot	50
	Porter	20
26	Bill at Gibson house	6.00
"	Carriage up to Mr. Dyer	3.00

	arrived brot up	52.80
28	Bill at Weddell house Cleve	5.00
"	From Ct. to Berlin	
	Berlin to Cleve	1.10
"	Passage & Sleeping Car fr. Cleve. to Cin	10.00
	Supper before starting	.75
29	Bill at Gibson H	3.00
"	Ticket Cin. to Wash	16.00
"	Sleeping Car	3.00
"	Omibus to Depot	.50
"	Porter at Hotel	.25
31	Breakfast	.75
"	Lunch	.75
	Baggage at Wash	.50
		<hr/> 125.40
	Returned to Washington	
	Aug. 30th 1871	

Species In Coal m.
 Cypricardina, Carbonaria Muck
 Nuc. ventricosa, H. & N. byrichii Gin
 Prothyris Kansas city
 Pecten aviculatus, Sw
 Avicula longa Gin. sp.
 Rhynchopora lepidodendroides M
 Allosisma clavata, Melch
 Pleurot. tabulata, Cor.

Representing Warrick types
 Sanguinolites sulcifera Win
 N. Stella Winch.
 P. Meeki, Win.
 Perm. sp. ? Shumardiana, Win.
 Leptæa strigosa White
 P. (Perm.) vesiculosa, Warr
 A. Winchelli, Muck
 Pleurot. Mississippian White (Burling.)

No 76 Delicate little Posterior—

base conical, pieces a little longer than wide. Subrad. except the one on the anal side (which is larger) of about the size of the basals or a little larger higher than long, and heavy. In form the larger one on anal side kept-
ap. and supports on its upper side an anal piece somewhat smaller in size which connects above with lower ventral plates, while on each side it seems to connect with radials, one on the left and two on the right, the lower one on the right as con-
necting with the right under oblique side of the anal, and bearing a second radial above. This, ^{apparent} lower primary radial may however be a subanal though I think

It is a true radial, although there is no such radial on the left. The first radial on the left and 2? on the right, are generally a little larger than any of the other radials, about as wide as long with a general pentagonal form though the upper ~~post~~ lateral angles may be slightly truncated, while on upper side of each is slightly concave for the reception of the arms which are rather slender, subangular and bifurcate on the ~~5th~~ or 6th piece above; above this again on the 4, 5 or 6th piece, while some of other divisions of the branches are seen above.

Column small conical below, but apparently sometimes a little sub-

~~sub~~ angular above

The arms are long and slender. I am not clearly satisfied about there being a subanal. Some specimens show small interradial between the arms - that is between those portions of the rays below the first bifurcation.

Christy's Crinoid. Anterior ray does not bifurcate, at least for five or six pieces above the first radial. In the two post lat rays, there is a bifurcation on the first radial, and above this the posterior branch.

Hall's Pot. prosticus, of which Mr. Dyer has the type, is a much more robust sp. with

^{broader}
stouter, and more rounded arms

67 This seems to be very distinct from all of the little *Heterocr.* - *Potamocr.* described by Hall, in the slenderness of its arms and the upward imbrication of the joints.

Heterocr. laxus, Hall (New sp.) differs from *H. simplex*, in having the interrad sp. concave. The arms more rounded, more slender. The most striking difference is that the arms of *H. laxus*, bifurcate - or rather give off alternately at intervals of 5 or 6 joints, smaller lateral branches, which give to the arms themselves a slightly flexuous appearance, while those of *H. simplex* are straight and simple.

41. Astrocer - Compare with
A. simplex

Smallest Gliptocr - Most nearly
like *G. parvus* Hall, in size and
general appearance but larger
with body more spreading apart
; has more numerous anal and
interradial plates, and differs
in having its basal plates project-
ing downward as little nodules
around the head of the column
instead being squarely truncated
Comp. with the large one N. 67

White Sulphur

W.
Spring W. V

Mountain. Ham.
Shale dip. 40° to
N. or NW

Ham.
Shale
nearly vertical

Spr.

Hot

Howards cr

Ham. sandstone
dipping at a high angle SE
Crk Sand

Hamilton Sh
SE dip

N

60

In the Hamilton shales near the
Spring I saw Spirifer mucronatus,
Orthis vanuxemi, Strophomena reticularis,
A. aspera, a smooth Avicula, and
a small Rhynchonella.

These shales are generally of a
drab or olive color on exposures, but
darker where cut into - some places
nearly black and distinctly laminated.
Much of the mass, however, is made
up of harder argillaceous layers
of gray color, varying from layers
of half an inch to 8 or 10 inches
thick - fossils very rare. Only card
and trilobites seen.

The little hills forming the
north part of the Spring grounds
is almost entirely made up of
cherty layers dipping at a high angle

to the south east. On the north
side of this little hill these cherty
beds form the Lovers Leap - a precip-
itous exposure facing the N. W.
perhaps 70 to 80 feet above How-
ards Cr. that runs near its base.
The rock, however, only shows an
outcrop 20 to 30 feet in height,
with a steep slope down to the
creek. Along the S. E. side of this
hill, excavations immediately behind
the row of Cottages, have exposed
the cherty layers. In some of the
masses I found Sp. arvensis
and the large Oriskany spirifer
with Rensselaeria ovoides, showing
the rock to be Oriskany.

Almost immediately below
the Spring the water runs over

Oriskany chert in place showing
fossils, and it must exist
directly under the Spring. In
shale cherty beds are also seen
50 to 60 yds farther down
directly in the walk to the bath
house. This Oriskany hill
is evidently thrust up through
the Hamilton beds, and the
Spring must have its origin
at the junction of the Oriskany
and Hamilton groups shales
from which latter it doubtless
derives its Hydrocarboniferous gas
and organic matter.

The Ham. beds continue on
down the valley of Haverhill
creek, and form the mountains
on each side. In those on

the south they generally dip at a
high angle to S.E. but show folding
and contortions. On the north west
they are sometimes seen dipping
to N.W. About $4\frac{1}{2}$ miles to the
west, or N.W. of the springs, these
shales are seen dipping to N.W.
and overlaid by a whitish mafic
coarse sandstone sometimes pebbly
(white small quartz pebbles). Some
shaly beds intercalated. $\frac{1}{2}$ mile
farther down, these beds are
overlain by hard bluish argo-arg
rock, overlaid and intercalated
by brownish red argillaceous beds
crumbling to red clay.

The light colored sand stone
with occasional pebbles, I think
forms the junction of Hamilton

-ton and Chemung; the beds
above being Chemung. Saw no
fossils.

7 Mi. nearly east of the
Springs, at Lewis's turnoff. The
same Chemung rocks are seen
dipping S. E. That the lower
part of the Chemung fine grained
of Chemung form. In the
more massive hard layers over
these stems and trunks often
enveloped in a bark like coat
of coal. Between here and
the Springs, the Mass. shales
nearly all the way dip at high
angles to S.E., the road crossing
the strike obliquely all the way

In Ohio Coal. m
Auculop. Whitei M
 at Farmersville Holmes Co
Polyzora submarginata M
 at Newark Ohio - same at
Edmondia? ^{Spinigyi, York} ~~submarginata~~ ~~Phillips~~
 New Ark Ohio Coal. m
Leontella (*perlegans*) M

Polyfura submarginata M. sp.
at Hawaiki, Ohio - same as No.

New Ark Ohio Coal Co

Ernestula (perlegans) M

Columbus Sept. 1st 1870

Synocladia like S. biserialis

on a beautiful new can-
cellated sp. the same
seen from Danville Ill
A. occidentalis Shum



Pec. aviculatus Sw. or at any rate the same sp. referred to it in Ill.

Astartella ovata M.

Macradon (Coxas sp)

Macrodon tenuilincatus, M.W.
Myalina Swallowi, M.C.
Adicula longa, Gein sp.
Schizodus
Lima setifera, Shumw.
Allorisma Ginitzi, M.
A. subcuneata? (small.)
Prod. Nabashensis.
P. Abrascensis (certain)
P. semireticulatus
P. punctatus
P. aequicostatus
Sp. lineatoides M.C. (small)
^{Sp. infima} Lingula ^{Kentuckensis. Sh.} Discina (same as in Ill.)
Inebriat. levidens
Strep. crassa
Athyris Like A. sub. but
app. dif.
Chonetes mesoloba

C. Vermulena?

S. canaliculatus - ribs not dist -
indty falciculated
S. like Cam. but smaller with
rounded apices -
Pleur. sphaerulata?
Heterophon percarinatus
P. Montfortianus
B. Carbonaria (Cox. Grayville)
Pleur. Carbonaria (curis?)
Cyrtolites Gillii, W. & St. I.?
McChesneys loosely coiled
Platyceras
Eumorphus rugosus Hall
Macrocharis Newberryi et.
Placunanomia carbonaria M.W.
Leinoids - with col. like Pentaler.
" fragments Graver. or Euprad.
yer.  
Discina capuliformis, M.C.

Myalina recurvirostris
Cyathox. prolifera

Section near Rushville

numerous shells in the Putnam Hills

80' Coals & shales
Harrisville S.S.

Quartz

Sandstone Logan Group

130' + sand, upper Waverly.

Shale, yellowish

Productus, orthids, Vermeulen
markings &c &c

Rush Cr.

12' Blue sandy shales, bivalves
coloris ruber & other bivalves


200' Waverly, Conglomerate

Lower Waverly

Black Slate



The Waverly on Ohio River from the
Limestone to Black Slate is 640' thick

Eumorphus conradi, Hall
from Cornif. li. Mr. Herzer has
specimens showing it to have a
sinus in the lip at the termi-
nation of the carina above;
and that it is not exactly coiled
on a plane. Some specimens
are sinistral & some dextral -
prob. distinct sp. I do not
think it a true Eumorph.

Syroceras — Hall from
Cornif. with projecting laminae.
It has its siphon near the
outer side of the curve, but
not quite marginal. It is
tubular but not beaded
thus 

Heteroceras, like H. constrictus, Ball
~~is~~ (the latter not yet figured by H.)
but differs, in having its body
lips distinctly constricted at the
top of the second radial, its inner
radial suture lips concave, its
arms decidedly more flattened on
the dorsal side, instead of pro-
ducing, and not near so divergent
at their bases as they spring
from the third radial. May be a
new or may be a sp.

Alleghany Tunnel

$\frac{7}{8}$ mile long. At west end strata crum-
pled and dipping at high angle 
At east end dip S. E.  strike N. E.
& S. W. cut through nearly at right angle
by the tunnel. Composed of thin and
some thicker layers bluish gray arg.

beds, from which chalybeate water drip
fontains with ferruginous markings.
Just outside E. end tunnel, for
100 to 150 yards, cut shows strata
bluish gray arg. beds in thicker
and more massive layers, same dip
and strike as in E. end tunnel

Same in some weathered parts of
the rock. Spirifer mucronatus
Orthis, Leptæna & Atrypa etc
Just E. of Alleghany (which is within
200 yds of Tunnel), saw nearly same
beds, a little more arenaceous.
Containing Schizodus, Avicula and
several other bivalves like Chama
gemma, and only 50 to 60 yds farther
E saw some probably layers, dipping
S. E. then bluish and gray beds
with intercalated layers deep brown
crumbly arg. Motacra

weathering to brown clay, also
some irregular seams of coal
~~all~~ thin some massive very
hard bluish gray layers. ~~all~~
all dipping S.E. but the dip
become gradually less steep as
we approach Lewis's tunnel, and
it seems not to be more than 25°
to S.E. Here the cut of R. R.
runs nearly N. & S. or a little
E. of N. diagonally nearly parallel
to strike. At very bottom of
cut there is an irregular seam
of coal & associated with this
some beautiful impressions of
fossils. Over this hard thick
layers bluish gray arg. beds
then intercalated beds crumbling
deep brown. Farther E. about
100 yds. but at a some

what higher act. elevation, and
of course at a higher level.
Beyond, in the tunnel very hard
light gray massive beds, containing
elephant and trunks of trees, coated
with layers of coal. These beds
probably come just above the
alternations of gray and deep
brown seen on the S.E. side of
cut over the former beds.
After leaving ^{Lewis's Tunnel} ~~Allochamy~~ the
road passes through mountains of
limestone dip S.E. for some miles
then ascends to ~~some shaly beds~~ after
~~wards like Ham. &c.~~ Some 8 or
10 miles beyond E. there is a
reverse of dip, that brings up Ham.
The beds become more and more
shaly eastward so that within ~~the~~
or 8 miles of Covington, they are

finely laminated, black, and
 dip at high angle to N. ~~SE~~
 Within about 4 or 5 miles of
 Cov. a series of massive limst.
 ones and cherty beds rise up from
 beneath these black shales, both
 dipping at a high angle N.E.

Covington

2 + 90° W
 quarry Li.



in the middle of the valley at
 Cov. near Hotel the R. R. cut through
 a low ridge black lam. shale, with
 some efflor. dipping at a high
 angle to N.W. but contorted and
 disrupted at N. end. In ^{foot of} ridge
 a little E. of N. Cov. quarries ~~massive~~
 some parts cherty dip. S. (W)
 a little E. of Cov. quarry of mass
 Li. 30 ft above valley, with
 dip 30 to 40° ~~SE~~ Very hard bluish
 gray li. with fossils 25 to 30 ft
 thick. Farther along SE. cut
 shows an extensive series
 of same Li with alternations
 of very siliceous masses
 almost like quartz

cut Li. 4

weathering to cherty masses the whole dipping at an angle of about 45° to S. W. Within about 25 ft. of top of series there is an intercalated bed lam. blk. shale and above this siliceous Li. mass. bluish gray like that below, and over this heavy beds of finely lam. blk. shale dipping at same angle to S. W. This I think belongs to Lower part Ham. gr. The hills on S. W. side Jackson R. seem to be entirely comp. of this blk. shale.

I think now this is the shale seen contorted and forming a low knob just below W. S. Sp. Sp.

At Hallaghans Station 4 1/2 m. W. of Covington, a very hard siliceous, blue ^{cherty} limestone, rises from beneath the finely laminated black shales of Ham. ~~gr. same~~ dip of Sh. & Li. being both to N. at angle 50° to 55° . Same in Stroph. dips. Orthis, Spinifer & peculiaris &c. Under this to E. it passes down into very siliceous blk. gray ^{or yellow} beds almost chert, some layers clayey, and some sandy. 1/4 to 1/2 m. E. of this a tunnel running E & W. 60 to 80 yds long passes thro. a ridge comp. of same sil. ^{oil} Li. of deep bluish color and very hard, that dips at 40° to 50° to S. E. being a direct reverse. At E. end tunnel, Red clay overlies rock, 1/4 m.

N. of this same beds are seen dipping same way, while much loose masses of rough porous iron ox. is seen over the surface in heaps and piles. ^{old} Iron ore here. Along a little valley coming in from N. this siliceous series, some part imp. oil. li. ^{blue} some ^{yellowish} gray arcaceous chert &c. are seen dipping at high angle to S.E. and showing app. 800 to 100 feet. some beds blue hyd. li. toward top passes into yellowish gray extremely cherty sandstone.

Imm. to S.E. of this succeeds the finely laminated blk. shale which forms the hills and mountains in that direction, with the same S.E. dip. These shales continue on with several abrupt reverses of dip to Covington. At one point about 1 m. N. of N. fr. Cov. they

are seen dipping to N.W. and then rises from beneath them some light yellowish arcaceous beds with same dip. immediately E. of this the dark shales are seen standing nearly vertical and then plunging off to S.E. This shale continues all the way to Cov. with some reverses of dip, and folding and contortions

Unpaid in my last bill

Nov. 15th 1870 —

Exp. on two boxes from
N. Y. paid

4 60

March 24. Exp. on M. S.

sent to D. H. at Blair, Pa

Washington

73

Carrier of same to Exp. of

25

Paid Mr. Leach for copying MS 10.08

Sent to above with a bill of

\$325.00 due for services for
this work, Apr 10th 1871

May 17th Dr. Newberry Dr
to and paid M. B. on
drawings over what I recd from
check

\$3.00

May 20 Pd. M. B. more

13 25

June 9th 1871 Paid Holmes for ^{shipping} drawings

37 50

Sept 1st	Bill at C. Chamberlain	
	and to depot	\$1 25
	Pass. to Cleve.	4 50
	Buff at Cleve.	45
Sept 8th	Passage to Detroit	4 50
	Lodging & supper at Det.	2 00
	Buff at Det.	1 00
" 9	Passage to Ann Arbor	1 40
	buff at Ann Arbor	25
	Buff at Ann A.	8 00
	Buff to depot	25
" 11	Passage to Detroit	1 10
	Buff at Det.	40
	Lodging & breakfast	2 00
" 12	Passage to Cleve.	4 50
<hr/>		
Sept 14th	Pass. Cleve.	
	to Wash	15 30
	Exp. Bagg. to Depot	50
		15 80

Species referred to *Cincinnati* and vicinity, in Hall's Palaeontology Vol. I. not clearly established

St. alternistriata, - probably only a variety of *S. alternata*

Orthis equivalvis, - no shell answering to the description & figures that I know of

Orthis dichotoma, - ~~uncertain~~
found at ~~Cincinnati~~

Orthis subjugata - not clear, probably a var. of *O. sinuata*

Platynotus Trentonensis, not satisfactory

Acidaspis Trentonensis, - very doubtful (This is referred to as the over

same as Locke's A. (Cervinus)
crocotus

Other species that he refers to
Specialy, as occurring in Cincinnati
and vicinity are, I believe, pretty
clearly identified

Hall frequently refers spe
to the wrong horizon in and
about Cincinnati, but we know
what he means

at Cincinnati, is never found
at Cincinnati, included by Hall as one of the Cerv.

Mr James found *Modiolopsis*
prolata Hall (Foster & Whit) at ~~Cenozoic~~
 in Clinton Co. N.Y. in the horizon
 of top hills at ~~Cenozoic~~ but in ~~the~~
~~horizon~~

Mr James has Specimen *Lavis-*
tella stilla, Hall from ~~Cenozoic~~ Richmond
 Co. that shows apparently many pores
 in the walls like *Savosiles*. A form
 with ^{smaller} larger cells. also found at
~~Richmond~~ Ia. a reference to Col. ~~alvord~~
 shows no such pores!

Mr James says Prof. Hall is in error
 as regards the horizon of the following forms
 1st *Lept. ucla* has a very limited vertical range
 a year. *Sericca* not found at ~~Cenozoic~~.

The ~~position~~ *sericea* is never found at a
 loc. or position like ~~Cenozoic~~.

Lept. blanda is never found
 at ~~Cenozoic~~. included by Hall as one of the ~~Co.~~

ambushed over 1580
 1000-20
 1000
 2000
 73
 sleeping car.
 Baggage at Wash.

Lep. tenuistriata, never found at
Gina. unless *L. gibbosa* is the same

~~*Orthis diachotoma*, not found at
Gina. Mr. James says he never
could make it out from any one.~~

Orthis subquadrata not found
at Gina.

O. occidentalis - doubtful as to its
occurrence at Gina.

Mr. James has a fine specimen of
Lepidostreus *Boyer*, flattened by lateral pressure
that shows it was covered by numerous
very small spines.

These frequently refers to

to the word
about his
what he is

Have been to 7 fens spec

to the word
about his
what he is

subidentus eye, gathered by local persons
that shows it was covered by numerous
small spines

ambulance over	1.50
Dinner & Supper	1.00
Sleeping car.	2.00
Baggage at Wash.	75
	<hr/>

8/9.75

Monday, 10/10/1910
 10/10/1910
 10/10/1910

Apr 29 Exp. on Hagers bay . 75

21. 24/1/1975

10/11/2008

~~1. Ticket to W. H. 500~~

~~ov. 18 Eggs on 2 boxes from
Wm. L. W. N. paid by me \$4.60~~

Millers, 3 W.